REMARKS

35 U.S.C § 102

The examiner rejected claims 1, 8 and 11 under 35. U.S.C. 102(a/e) as being anticipated by Yonetsu (US Patent No. 6,506,513). The Examiner states:

> **As seen in the figures, Yonetsu teaches a fuel cartridge, that is prismatic in shape, having a housing 1, a fuel egress port 3 that contains a heat producing element "a" (i.e. vaporizing plate, Figure 2), which is also in the interior of the cartridge (figures 13-148) and spaces a vapor portion of the cartridge from a liquid reservoir of the cartridge, a bladder 16 (figure 78) that holds a liquid fuel 7 such as methanol (column 5, lines 4-8) that is supplied to a direct methanol fuel cell 2 (column 2, line 34 - column 3, line 19, column 4, line 26 - column 5, line 35 and column 7, line 47 - column 7 line 62).**

The examiner seems to construe the vaporizing plate of Yonetsu as the heat producing element. Applicant disagrees. The vaporizing plate of Yonetsu is simply a porous carbon plate and that does not appear to produce heat. As described by Yonetsu[1]:

> Then, a unit cell having a reaction area of 10 cm^2 was prepared as follows; first, laminating the resultant electro-motive section, a carbon porous plate used as a fuel vaporizing layer which has an average pore diameter of 85 μm and a porosity of 73%,...

Nothing in Yonetsu suggests that the vaporizing plate however produces heat. Rather, Yonetsu describes that the vaporizing layer simply uses heat from the cell reaction[2]:

> And as the liquid fuel introduced into the unit cell is vaporized within a fuel vaporizing layer by utilizing the reaction heat of the cell reaction, it is not necessary to use auxiliary equipment such as a fuel evaporator.

The vaporizing plate of Yonetsu is therefore not an element that produces heat. However, for further clarification, Applicant has amended claim 1 to recite, *inter alia*, "a resistive heating element disposed in the fuel egress port to produce heat and provide a concomitant increase a vaporization rate of fuel from the housing." Yonetsu now clearly neither describes nor renders obvious at least the foregoing feature of amended claim 1.

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[1] Yonetsu, col. 13, lines 16-20.
[2] *Id.*, col. 5, lines 26-30.

Independent claim 1 is therefore patentable over Yonetsu for at least the foregoing reasons. Dependent claims 8 and 11 are patentable for at least the reasons for which claim 1 is patentable. Moreover, using such a heat producing element to increase the vaporization rate of fuel would not be suggested by Yonetsu. Nothing in Yonetsu would suggest a modification to accommodate "a resistive heating element … to produce heat … ."

35 U.S.C § 103

The examiner rejected claims 9 and 10 under 35. U.S.C. 103(a) as being unpatentable over Yonetsu and further in view of Gore (US 2004/0202904).

Claims 9 and 10 are patentable for at least the reasons for which claim 1 is patentable. In addition claim 9 requires that "… the resistive heating element is a wire disposed in thermal communication with the interior of the cartridge." As with Yonetsu, Gore also does not disclose or suggest "a resistive heating element disposed in a fuel egress port."

The examiner also rejected claims 12, 14, 16 and 17 under 35. U.S.C. 103(a) as being unpatentable over Yonetsu. The examiner states:

> **Yonetsu as discussed above is incorporated herein. Yonetsu further teaches in figure 7A a piston 30 (i.e. fuel sealing part) urged against the fuel via spring 14 (column 7, lines 48-62).**
>
> **Yonetsu does not teach the piston and the bladder in the same embodiment.**
>
> **At the time of the invention it would have been obvious to one having ordinary skill in the art to combine the embodiments of figures 7A and 78 of Yonetsu in order to provide a fuel cartridge with multiple solutions for properly containing the methanol fuel as well as providing sufficient means to push out the fuel through the fuel outlet port thereby providing the necessary fuel to the fuel cell in order for the fuel cell to operate. The above combination such as a piston urged against a bladder, according to known methods by Yonetsu yields the predictable result of providing a sufficient means to push out the fuel through the fuel outlet port thereby providing the necessary fuel to the fuel cell in order for the fuel cell to operate.**

Claim 12 has been amended to recite, *inter alia*, "a resistive heating element disposed in the fuel egress port to produce heat and provide a concomitant increase in a vaporization rate of fuel." Claim 12 is therefore patentable for at least analogous reasons for which claim 1 is

patentable. Dependent claims 14, 16 and 17 are patentable for at least the reasons for which claim 12 is patentable.

The examiner rejected claim 15 under 35. U.S.C. 103(a) as being unpatentable over Yonetsu in view of Gore. Claim 15 is patentable for at least analogous reasons for which claim 12 is patentable.

Double Patenting

The Examiner provisionally rejected claims 1, 8, 12 and 17 on the ground of double patenting as follows:

> **Claims 1, 8, 12 and 17 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 11 and 12 of copending Application No. 10/664,818. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims of copending Application No. 10/644,818 fully encompass the scope of instant claims the only difference is claim 12 provides further structure for the storage of the fuel which has been found in the prior art.**

Further, in response to Applicant's arguments filed November 4, 2009, the examiner states:

> **With regards to the Obviousness Type Double Patenting (ODP) rejections, as long as one set of claims fully encompasses the scope of another set of claims then an ODP rejection is proper. In this case as was stated in the grounds of rejection "the claims of copending Application No. 10/664,818 fully encompass the scope of the instant claims", i.e. the claims of the copending application are broader than the instant claims.**

Claims 1 and 8 of the present application recite a fuel cartridge that includes a housing, a fuel egress port and a resistive heating element. Claims 12 and 17 of the present application recite a fuel cartridge that includes a housing, a fuel egress port, a bladder, a resistive heating element and a piston urged against the bladder.

In contrast, claims 11 and 12 of co-pending Application No. 10/664,818 recite a fuel cartridge with a particular type of housing, viz. a "housing defining a fixed interior space to confine and to in direct contact with a liquid source of an oxidizable fuel, the housing having walls that define the fixed interior space and having at least a portion of one of the walls

comprised of a thermally conductive material," and a fuel egress port in a particular configuration with the housing, viz. "supported by one of the walls of the housing of the cartridge with the at least a portion of a wall of the housing sinking heat generated from external components to enhance a delivery rate of the liquid source of oxidizable fuel in a vapor phase to the egress port of the cartridge."

The claims of the '818 application do not fully encompass the scope of the instant claims. The claims of the '818 application are neither broader nor narrower than the claims of the instant case, but instead are directed to patentably distinct subject matter. Claims of the instant case pertain *inter alia*, to the use of a resistive heating element, whereas claims of the '818 application pertain to the use of a portion of a wall of the housing configured to sink heat from external components.

Applicant contends that the double patenting rejection is improper and should be removed, at least because Claims 11 and 12 of the co-pending Application No. 10/664,818 do not fully encompass the scope of claims 1, 8, 12 and 17 of the present application or *vice-versa*.

Applicant submits herewith a Petition for a One-Month Extension of Time. The extension fee in the amount of $130 is being paid concurrently herewith on the Electronic Filing System (EFS) by way of Deposit Account authorization. No other fees are believed due, but please apply any other charges or credits to deposit account 06-1050.

Respectfully submitted,

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